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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE

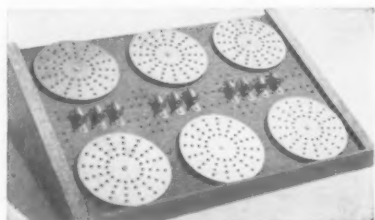


Top Talent Winners

See Page 180

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... an hundreds of other individuals
and institutions

AERONAUTICS

3,000 Miles in 3 Hours

Supersonic transports that fly 1,000 mph are foreseen. Modifications in fuselage shape will make such speeds possible, Richard Whitcomb tells STS winners.

► **SUPERSONIC TRANSPORTS** that fly 3,000 miles in three hours will be possible within 10 years, Richard Whitcomb, father of the wasp-waisted fuselage design that increased the speed of supersonic warplanes 25%, said in Washington.

Speeds of 1,000 miles per hour will be possible, he told the 40 winners of the Sixteenth Annual Science Talent Search, through modifications in fuselage shape "considerably different than the wasp-waisted modification of the present generation of supersonic airplanes."

"The results of this research should allow the initiation of the design of a supersonic transport in the immediate future. Such an airplane should be able to fly approximately 3,000 miles at about 1,000 miles an hour. Thus, it would be able to fly across the country or the Atlantic Ocean in roughly three hours, and thus should bring most of the important population centers of America and Europe within a short flying time."

In discussing current research in aeronautics, Mr. Whitcomb said that experimental rocket-powered missiles have already flown far beyond 3,000 mph, "and in the future, man-carrying, rocket powered airplanes will fly at these higher speeds."

The big problem, that of aerodynamic heating, he told the young scientists, is being studied through the use of free-flying models similar to the multistage rockets used for ballistic missiles. These rockets, used only for research, he pointed out, have obtained velocities of nearly 7,000 mph. He also said that "an advance research airplane, the X-15, is now under construction by the North American Aviation Corporation," and will fly faster and higher than man has ever ventured before.

Mr. Whitcomb, who is an aeronautical research scientist at Langley Aeronautical Laboratory of the National Advisory Com-

mittee for Aeronautics, Langley Field, Va., also discussed take-off and landing in the low speed range.

One of the promising devices for the solution of this problem, he explained, is a "jet-augmented flap." This device provides stabilization of the boundary layer and also diverts the jet to provide additional vertical thrust. Much work is still needed to perfect this device, Mr. Whitcomb noted, but such a "jet-augmented flap," it has been estimated, would roughly halve the take-off and landing distance for a typical aircraft, and cut the take-off and landing speeds by 30%.

Mr. Whitcomb concluded, "among the future advances resulting from research will probably be the application of means for greatly reducing the take-off and landing distances and speeds for commercial and military aircraft; the achievement of long-range full-time supersonic flight, particularly the development of a supersonic transport; and the achievement of manned flight at supersonic speeds several times those of present maximum speeds."

The father of the wasp-waist in airplane design, a development that has been called the most significant achievement in aeronautics since breaking the sound barrier, disclosed his predictions at a meeting of the Sixteenth Annual Science Talent Institute, conducted by SCIENCE SERVICE, attended by 40 high school seniors who were in Washington to vie for the Westinghouse Science Scholarships. Mr. Whitcomb's talk was followed by a talk on "Research in Physics," by Dr. L. M. Lederman, associate professor of physics at Columbia University, and another on "Research in Mental Health," by Dr. Winfred Overholser, superintendent, St. Elizabeths Hospital, and professor of psychiatry at the George Washington University School of Medicine in Washington.

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at Geneva, Switzerland. They were created in response to that appeal as a memorial to Henry and Edsel Ford. One million dollars was authorized to be used at the rate of \$100,000 a year for 10 years "for the advancement of the science of atomic energy for peaceful purposes. . . ."

Dr. Killian said of Prof. Bohr, "His humanity, his goodness and wisdom—in addition to his outstanding scientific contributions—have inspired the many scholars who have been his students and colleagues to become a nucleus of international understanding and goodwill."

"During the years since World War II, Prof. Bohr has been active, not only in the operation of his distinguished Institute with its international body of scholars, but he has also actively and devotedly urged international cooperation in developing the peaceful uses of atomic energy. Toward this end, he has privately and publicly expressed his fervent hope that the progress of science might initiate a new era of harmonious cooperation between nations."

In addition to the honorarium of \$75,000, Prof. Bohr received a medallion, designed by Sidney Waugh, and cast in gold.

Nominations for the first Atoms for Peace Award numbered 75 from 23 countries around the world.

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● RADIO

Saturday, March 30, 1957, 1:45-2:00 pm, EST. "Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Dr. A. R. P. Walker, director, Human Biochemistry Unit, South African Institute for Medical Research, Johannesburg, will discuss "Nutrition of Primitive Bantus."

PHYSICS

Bohr Receives Prize

► **PROF. NIELS BOHR**, Danish atomic physicist and teacher, was named recipient of the first \$75,000 Atoms for Peace Award in New York.

Prof. Bohr, who is now 71 years old, opened up a whole new era in the field of atomic physics when, at the age of 28, he presented a basic theoretical work on the structure of the atom and contributed materially to clarification of the basic concepts of quantum physics. For his work,

he was awarded the Nobel Prize in Physics in 1922.

Since 1920, the Danish scholar has been director of the Institute for Theoretical Physics at Copenhagen which was founded on his initiative.

The award was presented by Dr. James R. Killian Jr., chairman of the Board of Trustees of Atoms for Peace Awards. The Awards "grew out of an appeal from President Eisenhower" made on July 20, 1955,



RECEIVES AWARD — Prof. Niels Bohr, Danish atomic physicist and teacher, is the recipient of the first \$75,000 Atoms for Peace Award.

GENERAL SCIENCE

Pick Top STS Winners

Brett M. Nordgren of South Bend, Ind., received Science Talent Search \$2,800 grand award. Jonathan D. Glogower of Brooklyn, N. Y., won the \$2,000 scholarship.

See Front Cover

► RESEARCH WORK in the world of subatomic particles helped Brett Marcus Nordgren, a 17-year-old high school senior of South Bend, Ind., win top award in the Sixteenth Annual Science Talent Search. The teen-age physicist was awarded the \$2,800 Westinghouse Grand Science Scholarship. He is shown on the right on the cover of this week's SCIENCE NEWS LETTER.

The second-place award, a \$2,000 scholarship, went to 16-year-old Jonathan David Glogower of Brooklyn, N. Y., shown on the left on the cover of this week's SCIENCE NEWS LETTER. He has formulated a method for the physiochemical analysis of an ideal mixture of liquids to study its change as it vaporizes.

Ranking highest among eight \$400 scholarship winners was 17-year-old Susan Iknayan of Charleston, Ill., who searched for direct causes of sterility in fruit flies, brought on by colchicine, a drug extracted from the autumn flowering crocus and used in cancer research.

First-award winner Nordgren, who was voted the top science student in Indiana in 1956, has developed an automatic Wilson cloud chamber. With the device, he is able to track the vapor trails formed by invisible subatomic particles. He is now adding to it an automatic counter that will do a good part of the painstaking tracking for him.

As he explains it, the nuclear trails along the path of the particle must be photographed quickly, "since within one second they will diffuse and vanish." To trap the trail, he has mounted a 35 mm camera on his chamber and is now working on a counter control. This will permit his device to take many pictures automatically before the trails disappear.

This system, he points out, is generally used to record the tracks of cosmic rays. The young scientist, who hopes to attend Purdue University, Lafayette, Ind., is now a senior at South Bend's Central High School. His future plans call for studies leading to a doctorate in nuclear physics.

The son of Mr. and Mrs. Arnold Nordgren of South Bend, he lists electronics, photography, and physical chemistry as his hobbies. He received an honorable mention award at his local Science Fair, was vice-president of the Indiana Junior Academy of Science, president of the Central High School Science Club and president of his church youth club.

Jonathan D. Glogower, second-place winner, points out that one advantage to his ideal mixture analytical method is that

it is a "micro method." He explains that a very tiny amount of sample, on the order of one milligram, can yield results with simple equipment. The young chemist and mathematician thinks his work might be applied to studies of petroleum distillates.

Glogower, who hopes to go to Harvard, plans a career in theoretical physics with particular emphasis on the nuclear theory of protein chemistry.

A senior at Midwood High School, the teen-age scientist plays chess and the violin, is captain of his high school mathematics team and took first prize in the New York University Natural Science contest in 1956. He is the son of Mr. and Mrs. Jacob Glogower of Brooklyn, N. Y.

Susan K. Iknayan, runner-up and alternate to the \$2,000 Grand Scholarship is a senior at Community Unit High School, Charleston, Ill. She says that her fruit fly experiments have led her into a detailed study of the effects of colchicine on cell development and on the induction of mutations in genes affecting the fertility in drosophila, or fruit flies.

She hopes to attend Washington University in St. Louis, Mo., and become a teacher or researcher in biology or chemistry. She is the daughter of Dr. and Mrs. H. A. Iknayan of Charleston, Ill.

The winners of the Science Talent Search, administered by SCIENCE SERVICE through Science Clubs of America, were announced at an awards banquet, following an address by R. Adm. H. G. Rickover, USN.

The banquet culminated a five-day competition among 40 young high school seniors from 21 states and the District of Columbia. (For related stories, see p. 179 and 182, and SNL, March 16, p. 166 and 170.)

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EXHIBIT PROJECTS—Some of the projects of 40 top contestants for Westinghouse Science Scholarships are shown on the opposite page.

Left column, beginning at the top, are: John Curry with his "beat-to-light transformer"; Marjorie Simila with her display of tests on various kinds of detergents; Dean Luebbs showing the significance of molybdenum on crop fields; Dorothy Hollingshead demonstrating the effect of three chemicals on plant growth.

Center column are: Susan Iknayan showing her experiments with fruit flies and cell structure; Robert Adler showing how he separated the blood

proteins by electrophoresis; Warren Brand demonstrating the effects of an electric spark on organic compounds.

Right hand column are: David Deamer Jr. showing his studies of why certain protozoa form into rings and clusters; Warren Rauscher showing uses of chromyl chloride for the synthesis of organic chemicals; Robert Goldstein showing how auxin affects plant growth and structure; and Eric Eikenberry demonstrating the effects of gibberellic acid on the growth of tomato root cultures.→

SCIENCE NEWS LETTER

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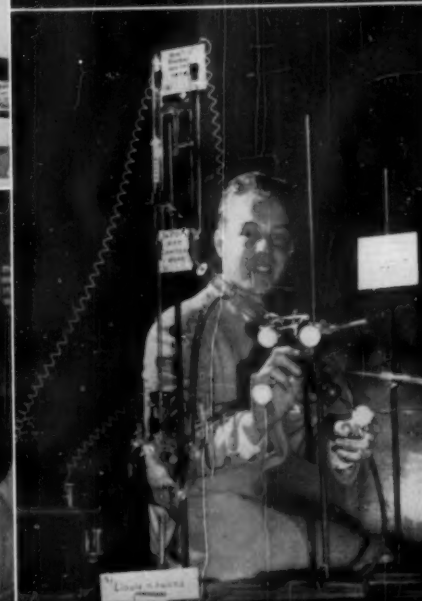
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GENERAL SCIENCE

Winners of Scholarships

GRAND SCHOLARSHIP OF \$2,800

Nordgren, Brett Marcus, South Bend, Ind.

\$2,000 SCHOLARSHIP AND ALTERNATE FOR \$2,800

Glogower, Jonathan David, Brooklyn, N. Y.

ALTERNATE TO THE \$2,000

Iknavan, Susan Kathleen, Charleston, Ill.

SCHOLARSHIPS OF \$400

Adler, Robert William, Marshfield, Wis.

Adler, Stephen Louis, Bayside, N. Y.

Anderson, Sonia Ruth, Omaha, Neb.

Curry, John Lamar, Evanston, Ill.

Deamer, David Wilson, Jr., Westerville, Ohio

Iknavan, Susan Kathleen, Charleston, Ill.

Pollock, Edward Jay, Skokie, Ill.

Reichert, John Douglas, Austin, Texas

ALTERNATES

1st alt. Gilmartin, Michael Cooper, Tulsa, Okla.

2nd alt. Adams, David Bachrach, Neosho, Mo.

SCHOLARSHIPS OF \$100

Albro, Phillip William, Geneva, N. Y.

Baldersee, Willis Willard, Jr., Grants Pass, Ore.

Beach, Rochelle Ruth, Neodesha, Kans.

GENERAL SCIENCE

STS'ers Not "Egg-Heads"

►THE BRIGHT SCIENCE STUDENT in America's high schools is not generally considered a "long hair" or an "egg head" by fellow students, despite reported surveys in some localities to that effect.

By a vote of 34 to 6, the 40 winners of the Sixteenth Annual Science Talent Search conducted by SCIENCE SERVICE answered either "few" or "none" to the query put to them as a Science Service Grand Jury:

How many of your fellow students consider you a "long hair" or an "egg head?" The dissenting six students said "most" of their fellow students consider them high-brows.

The 31 boys and 9 girls chosen from all parts of the nation as top science seniors of the nation were empaneled as a "grand jury" of opinion when they came to Washington to compete for the Westinghouse science scholarships.

When they were asked whether other students disapprove of their interest in science, they unanimously agreed that few or none disapprove.

On the other hand, they do feel that only a few other students are envious of top science students. The vote on this was 34 favoring this attitude, with a minority of six saying that most of their classmates are envious.

Top science students are not rated higher in the schools than top athletes, despite the evident growing prestige of science achievements. The opinion on this was that most of the fellow students of the winning young

Brand, Warren Louis, Phoenix, Ariz.
Burnham, David Charles, Pittsburgh, Pa.
Chaniot, George Edward, Jr., Decatur, Ill.
Cuffey, Roger James, Bloomington, Ind.
Ehn, Dennis Clifford, Greeley, Colo.
Eikenberry, Eric Franklin, Indianapolis, Ind.
Goldstein, Robert Edward, Rochester, N. Y.
Gornan, Richard, Brooklyn, N. Y.
Greenlee, Donald Ray, Charleston, W. Va.
Hanor, Jeffrey Sydney, Arlington Heights, Ill.
Hollingshead, Dorothy Anita, Atlanta, Ga.
Landman, Maurice Alan, St. Albans, N. Y.
Luehrs, Dean Carl, Lansing, Mich.
Margolish, Merry A., New Rochelle, N. Y.
Michael, Sandra Lee, Brooklyn, N. Y.
Nieman, George Carroll, Tipp City, Ohio
Phillips, Charles Thomas, Weston, Mass.
Rauscher, Warren Carleton, San Francisco, Calif.
Ryan, Philip Meade, White Plains, N. Y.
Schlatter, Violette E., Archbold, Ohio
Shapiro, Howard Maurice, Brooklyn, N. Y.
Silver, Jack Howard, Missoula, Mont.
Simila, Marjorie Kay, Salem, Ore.
Sprenk, Kullikki Kay, Forest Hills, N. Y.
Ullrich, Felix Thomas, Jr., Newark, N. J.

Addresses are locations of schools from which entries were made.

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A medical school education must necessarily be centered around acquiring a reasonable and balanced portion of the available knowledge and must give training in the ability "to come to adequate conclusions from inadequate evidence," he said.

One of the big changes in medical education over the years has been the incorporation of the medical school within a university, Dr. Luckey noted. This has led to some difficulties because "with the possible exception of the football team, no other unit of a university is subject to more abuse or is the cause of such academic strife," he reported.

Nevertheless, the university's influence on research and teaching methods has greatly advanced the state of the nation's health, he added.

Forty years ago medical school graduates began practicing immediately after graduation or after one year of internship. Today a medical education takes 10 years, including at least four years of internship and residence training after graduation from medical school, Dr. Luckey said.

Science News Letter, February 23, 1957

SCENES FROM THE INSTITUTE

—Some of the 40 STS winners are shown in the photographs on the opposite page in some of their many activities.

Left column beginning at the top are: Dr. John W. Colman of Westinghouse Research Laboratories demonstrating liquid nitrogen as he lectures to the winners; Dr. Winfred Overholser, superintendent of St. Elizabeths Hospital, is questioned by four of the winners; Dorothy Hollingshead and David Deamer with other winners in the background, photographed on the Capitol steps.

Top center column shows Dr. Gary Felsenfeld, himself an STS winner in 1949 and now at National Institutes of Health, explaining a protein model to Sandra Michael and Edward Pollock.

Right hand column are: three of the winners in an environmental chamber at the Naval Ordnance Laboratory; Brett Nordgren, the top winner, is congratulated by Dr. Leonard Carmichael, president of SCIENCE SERVICE, as Mr. Gwilym Price, president of Westinghouse Electric Corporation, and R. Adm. H. G. Rickover, the banquet speaker, look on; Dr. Dean Cowie talks to the group in the laboratory at the Department of Terrestrial Magnetism, Carnegie Institution of Washington; the ten top winners smile happily after the banquet; and Violette Schlatter is shown inspecting the solar furnace at the National Bureau of Standards. →

scientists rate top athletes higher than top science students. Of the 40, 27 are of this opinion, while nine took the opposite viewpoint, with three holding that the ratings were equal, and one could not make up his mind.

"Science students are more likely to be elected to offices than athletes as they are considered more likely to fulfill the duties promptly and correctly," one science student commented.

One winner confessed that he feels he has not been able to break into a special science-minded clique in his school which most fellow students consider composed of intellectual snobs.

Athletes in his school look upon his science activities with contempt and perhaps with some envy, one winner reported.

A fourth of the winners polled reported that they participated in athletics, ranging from golf to football.

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EDUCATION

Today's Medical Student Has Too Much to Learn

►TODAY'S medical student cannot possibly learn everything made known by the tremendous advance in knowledge in the last 40 years, Dr. E. Hugh Luckey, dean of the Cornell University Medical College, Ithaca, N. Y., told the American Medical Association's 53rd annual Congress on Medical Education and Licensure in Chicago.



MINERALOGY

**Find Uranium Mineral
Coffinite, in New Zealand**

► **COFFINITE**, the highly radioactive uranium mineral, has been discovered in rocks of the Buller Gorge region of the South Island of New Zealand, J. J. Reed and G. G. Claridge of New Zealand report in *Nature* (March 9).

The uranium mineral, first discovered in 1955 on the Colorado Plateau in the United States, has also been made in the laboratory. Coffinite is a uranous silicate with the chemical formula U_2SiO_5 and contains as much as 61% uranium. Highest amounts of uranium in minerals are found in the uraninites, with about 85%.

Science News Letter, March 23, 1957

MEDICINE

**New Thyroid Drug More
Effective Than Old Ones**

► **A RECENTLY DISCOVERED THYROID HORMONE** called sodium liothyronine works faster and more effectively than those presently used, Dr. Elmore M. Fields, Hempstead, N. Y., reported in the *Journal of the American Medical Association* (March 9).

In a trial on 100 children, the hormone produced none of the side effects noted with other thyroid gland substances and worked in illnesses where these other preparations were only partly effective.

The hormone was used to treat both hypothyroidism and metabolic insufficiency. The first condition is underactivity of the thyroid gland and the other is thought to be caused by the body cells' poor use of thyroid products. Children suffering from them do not grow normally.

Both of the conditions are often satisfactorily treated with presently used hormones, but in some children they cause such side effects as headaches, increased irritability and abdominal pain, Dr. Fields reported.

In almost all those treated with liothyronine, there was a striking improvement in behavior, circulation and appetite. During the original three-month test period, bone growth in many increased as much as 200% beyond that expected for normal children of the same ages, he said.

Science News Letter, March 23, 1957

CHEMISTRY

**Synthetic Fibers Promise
Inflatable Buildings**

► **A FUTURE FULL** of inflatable plastic municipal buildings and springless automobiles was forecast for the synthetic fibers industry by Frank J. Soday, the Chemstrand Corporation, Decatur, Ala., in a report to the American Institute of Chemical Engineers meeting in White Sulphur Springs, W. Va.

Right now, these inflatable buildings are essentially balloons permanently attached

to the ground, but they offer an almost unlimited field for industrial expansion, he said.

They were first used to house large radar installations in Canada and Alaska and, by using lightweight fabric supported by only a few ounces of internal air pressure, could withstand winds up to 150 miles per hour. The air pressure inside is not high enough to be uncomfortable and can be maintained with a small air pump, he said.

Synthetic fibers also promise to replace the springs used in today's automobiles, Mr. Soday reported. A new suspension system using a coated synthetic fabric bellows of compressed air instead of the present metal springs is already in use on trucks and buses and will be put in passenger cars in the very near future. The motoring public will then be literally riding on air, he said.

Radiation is being used by the industry to produce synthetic fibers with better strength and heat resistance. The process promises to make available an entirely new series of fiber types with many applications.

In another new process, smooth synthetic fabrics are being given the same textured effect as spun yarn. A stream of air moving at high speed causes the formation of tiny loops at irregular intervals along the yarn and breaks up its smooth surface.

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BIOCHEMISTRY

**Develop Fast Method for
Blood Protein Analysis**

► **A QUICK** and simple way to determine the kind and quantity of proteins in human blood has been developed by scientists at the Detroit Institute for Cancer Research and the Henry Ford Hospital, Detroit.

The technique has already been used to measure the quantities of nine distinct proteins, to detect the presence of many others, and may give doctors an important new diagnostic tool for many diseases.

Devised by Drs. Morris Goodman, David S. Ramsey and William L. Simpson of the Institute, and Drs. Donald G. Remp, Daniel M. Basinski and Michael J. Brennan of the Hospital, the new method uses blood serums obtained from chickens.

Each specific human plasma protein is injected into chickens, which produce antibodies against it. The antibody-loaded serum is then extracted ten days later and used to test small samples of human plasma.

The chicken antiserum will then precipitate out of the sample the same protein against which the chicken developed the antibodies. By measuring the amount of precipitation, the quantity of the protein present in the sample can be determined.

The new technique is faster and more sensitive than the standard electrophoretic method, in which plasma proteins are identified by the speed with which they travel across electrified paper.

The work was supported by the American Cancer Society and the Kresge Foundation.

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IN SCIENCE

PHYSICS

**City Dwellers Safer
From Atomic Fallout**

► **IF** you live in the city you are safer from atomic fallout, except from a direct hit, than those who live in the country, Dr. Herman A. Heise and Eugenia R. Heise, Milwaukee, Wis., reported in the *Journal of the American Medical Association* (March 9).

From a study of pollen and mold fallout over Milwaukee, the researchers found that the warmer air existing over cities causes an upward air current which carries solid particles aloft and keeps them there. They fall to the ground when there are no upward currents, especially when the air nearer the earth is cooler than that above it, they reported.

This knowledge could prevent the hysterical exodus from a city to a more dangerous rural area in the event of an atomic attack, they suggested.

To make the city even safer, its naturally higher temperature could be artificially increased. Houses could be heated, street lights left on, and windows opened on the leeward side. Even an isolated house might get some protection by lighting fires on the windward side to produce upward moving air currents.

The researchers tested their theory by building a small model city and above it they scattered mold spores in a powder that resembled a cloud.

When the miniature city was warmed slightly to a temperature above that of the surrounding air, the clouds over the city billowed noticeably but kept their distance from the ground. They finally dispersed over the rural areas of the model.

Science News Letter, March 23, 1957

ELECTRONICS

**Electronic "Brain"
Tracks Army Supplies**

► **AN ELECTRONIC "BRAIN"** is being used in Detroit to keep tabs on Army Ordnance Corps supplies, saving taxpayers millions of dollars.

The giant computer, known as Bizmac, is the first of its kind in full operation. Built by the Radio Corporation of America, the electronic whiz covers about 20,000 square feet of floor space and is believed to be the world's largest "brain."

It keeps track of more than 100,000,000 facts about the Army's vast inventory of tank and automotive spare parts throughout the world. Using the computer, months of paper work have been reduced to minutes of push-button operation.

Science News Letter, March 23, 1957

THE FIELDS

METALLURGY

Metal Alloy Makes Powerful Magnets

► A SUPERIOR magnetic alloy, called Supermendur, has been developed from iron, cobalt and vanadium, H. L. B. Gould and D. H. Wenny of Bell Telephone Laboratories, Inc., Murray Hill, N. J., report in *Electrical Engineering* (March).

Its exceptional physical and magnetic properties were shown in standard tests in which the alloy established six new records for high magnetic characteristics, the engineers report.

It can increase the power output of a transformer coil by 30% and promises to be of value for transformers, high temperature applications, memory devices and telephone receiver diaphragms, they state.

Magnetic amplifiers using the alloy can be reduced in size by 20% and still furnish the same output. In high power electronic circuits the new material will, in some cases, reduce the number of amplification stages from two to one, and make further miniaturization possible.

The alloy is particularly valuable because it can be cold rolled like other soft magnetic materials into the thin gauges that are so vital to modern requirements, the engineers said.

Science News Letter, March 23, 1957

MEDICINE

Large Number of Dope Addicts Among Doctors

► ENOUGH DOCTORS to equal the entire output of one of the country's 76 medical schools turn into dope addicts every year, Dr. J. DeWitt Fox, Detroit, Mich., reports in the *Journal of the Michigan State Medical Society* (Feb.).

Warning all doctors not to overlook the menace in their own medical bags, Dr. Fox quotes Dr. Harris Isbell, director of the U. S. Public Health Service Hospital for addicts in Lexington, Ky., as saying that scarcely a week passes when a "physician who is a Demerol addict is not admitted to our institution."

Since Demerol, a newer pain killing drug, made its appearance, most new doctor addicts take to it rather than morphine, Dr. Fox reports.

Physician addicts fall into three classes: there are alcoholic physicians who relieve hangovers with opiates; tired doctors who habitually blot out fatigue with a narcotic; and doctors suffering pain from disease, who overdose themselves with opiates.

"The overly fatigued physician is all too common. He loses sleep several nights, receives another call, which he feels he cannot

make without a 'stimulant' to keep him going. He takes a dose of morphine, methadone, or Demerol, and goes ahead and makes his call. Finding such an escape a great relief he repeats it, until he too falls through the trap door into addiction," Dr. Fox explains.

However, there is always a serious emotional disorder in the background, which can be anything from a marital rift to income tax trouble.

"What every physician must remember is that he is human. Even though in his bag is an escape through a needle, he must never allow himself the pleasure of using it," Dr. Fox warned.

Most doctors need a good night's sleep, more vacation time, and release from tension. Without it, they are in greater danger from temptation than any layman, because of their easy access to the drugs.

"The outstanding feature of these cases of physician addicts appeared to be lacking of warning young doctors before they went out into practice," Dr. Fox said.

Every medical student and intern should have it drummed into him just as tavern owners tell their bartenders they will be useless once they start drinking themselves.

"It is time every doctor—you and me—and every medical student—be told the 'facts of life' when it comes to narcotic addiction," Dr. Fox warns his colleagues.

Science News Letter, March 23, 1957

PUBLIC HEALTH

TB Among Students Shows Sharp Decline

► IN THE PAST 15 years, the incidence of active and arrested cases of tuberculosis among college students has dropped off sharply.

This result is shown in a survey conducted at the University of California at Los Angeles.

The survey was conducted in the Student Health Service under the direction of Dr. Gertrude Huberty through a grant from the Los Angeles County Tuberculosis Association.

Tuberculin skin reaction tests were given to more than 2,000 entering students last spring. Reactions were correlated with chest X-ray results. Nineteen percent of the group had positive reactions. Only two of this group were found to be active cases.

A similar survey in 1940-41 resulted in 40% positive reactions and another in 1946-47 showed 65% positives.

The large percentage of positives in the latter survey was thought to be the result of the large influx of veterans, many of whom served in areas where exposure to the disease was frequent.

"Modern methods of tuberculosis treatment are so effective that students with active disease often lose but one semester," Dr. Huberty says. "They may return the next semester and continue their educations under chemotherapy which maintains them in a non-contagious state."

Science News Letter, March 23, 1957

PUBLIC HEALTH

Daily Requirements of Two B Vitamins Change

NEW "minimum daily requirements" for two of the B vitamins were proposed by the Food and Drug Administration in Washington.

The proposed regulation would set a minimum daily requirement for niacin for the first time, at 10 milligrams. It would also reduce the adult minimum daily requirement for riboflavin from two milligrams to one milligram.

The minimum daily requirements help protect consumers from exaggerated and misleading claims of the vitamin content on the labels on foods and drugs. When a manufacturer claims that his product contains a particular vitamin, he is required to show on its label how much of the vitamin it contains and the proportion of the minimum daily requirement it supplies for adults and children.

It was known in 1941 that niacin plays an important role in human nutrition, but until now there has been no general agreement on its minimum daily requirement, Dr. E. M. Nelson, Food and Drug Administration, U. S. Department of Health, Education and Welfare, reported.

The minimum daily requirement of riboflavin was set at two milligrams in 1941, Dr. Nelson said, but this was based upon rather limited evidence in the cure of ariboflavinosis, a disease caused by too little riboflavin in the diet.

Nutrition scientists are now generally agreed that the daily requirement may be met by one-half that amount, he said.

Science News Letter, March 23, 1957

MEDICINE

Temperature Affects Loss Of Injured Nerve Fiber

► A SMALL RISE IN TEMPERATURE can greatly increase the degeneration of animal nerve fibers after they are injured, Drs. H. J. Gamble, F. Goldby and G. M. R. Smith, St. Mary's Hospital Medical School, reported in *Nature* (March 9).

This temperature effect is important because one of the commonest methods for investigating pathways and connections in the nervous system involves studying the degeneration that takes place after experimental injury. It is essential to know how much time must elapse before it can be assumed that the surviving nerve fibers, normal in appearance, cannot have been affected by the injury, the researchers reported.

The effects of temperature were studied in lizard-like animals that adjust their body temperatures to that of the surrounding air. Animals kept at 68 degrees Fahrenheit showed the same amount of degeneration within only three days that was found after three weeks in animals kept 12 degrees cooler.

Science News Letter, March 23, 1957

ASTRONOMY

Mercury Seen at Dusk

Jupiter and Mars can also be seen during April. The first eclipse of the year, an annular eclipse of the sun, will occur on April 29. Naked-eye comet scheduled.

By JAMES STOKLEY

► MERCURY, smallest of the nine planets and nearest of them all to the sun around which they revolve, will make one of its rare appearances about the middle of April.

On the 15th it will be farthest east of the sun—"greatest eastern elongation" the astronomer calls it—and for a few days around then it will be seen near the western horizon just after sunset. Since at best it will set about an hour and three quarters after the sun, you will have to look for it as dusk gathers.

By the time the western sky is completely dark, Mercury will also have gone out of sight.

Because of this, Mercury does not appear on the accompanying maps, which show how the sky will look about 10 o'clock, your own kind of standard time, at the beginning of April. It will appear similarly about 9:00 p.m. at the middle of the month, and about 8:00 p.m. at the end.

Also not shown on the accompanying maps is the comet scheduled to be visible from the Northern Hemisphere in late April and May. It is predicted to blaze forth at zero magnitude, making it one of the most brilliant objects in the sky at that time.

If the comet lives up to expectations, it will be the biggest and most spectacular of its breed during the 20th century, brighter than Halley's Comet, last seen in 1910.

Known as Comet Arend-Roland after the two Belgian astronomers who discovered it, the object was first spotted on Nov. 8, 1956.

Since then, astronomers both here and abroad followed it with their telescopes until it traveled too close to the sun to be seen. By the end of April, it will be far enough away from the sun to be visible again.

Its brilliance will fade rapidly and it will disappear from naked-eye view by the first of June. During late April, the comet will appear very low in the northwest sky after sunset, between the constellations of Andromeda and Aries, the ram.

Comet Arend-Roland will reach its perihelion on April 8, when it will be only 29.7 million miles from the sun.

Two planets besides Mercury are shown. Brightest is Jupiter, which shines high in the south in the constellation of Virgo, the virgin. Jupiter is now so brilliant, about 15 times as bright as a typical star of the first magnitude, there will be little difficulty in locating it.

The other planet is Mars, still receding after the close approach that it made last September, so it has faded greatly. Look toward the west, and you can see it in Taurus, the bull, to the left of the bright star Capella, in Auriga, the charioteer. Mars, however, has the brightness of a star of the second magnitude.

Nine First Magnitude Stars

In addition to Capella, nine other bright stars (i.e., of the first magnitude) are now visible. Low in the southwest is Sirius, the dog star, part of Canis Major, the great dog.

To the right, directly west, is Orion, the warrior. Part of this figure is below the horizon, at the times for which our maps are drawn, but Betelgeuse is still visible, above the three stars that form his belt.

Farther to the right is Taurus, the bull, in which Mars now stands. Below the planet is Aldebaran, a first-magnitude star, although its low altitude causes it to be dimmed. Above Orion is the figure of Gemini, the twins, with Pollux, of the first magnitude, and Castor, of the second.

To the left of this group we find Procyon, in Canis Minor, the lesser dog. Still farther to the left, high in the southern sky, is Leo, the lion, with the bright star Regulus. This star, with a semicircle of stars just above, forms a little figure known as the Sickle. Regulus marks the end of the handle, which points downward.

High in the east is Bootes, the bear-driver, with brilliant Arcturus. Below this constellation we find Virgo, the virgin, with Spica, as well as Jupiter, a temporary visitor.

Finally, low in the northeast, Vega, part of Lyra, the lyre, is indicated. Even more than Aldebaran, its brilliance is dimmed by its low altitude, but later in the night, as

it climbs toward the south, you will be able to see it shining with accustomed glory.

By that time another planet will have appeared. Saturn, in the constellation of Ophiuchus, the serpent-bearer, rises in the east a little before midnight.

Venus, which has not been mentioned, passes behind the sun on April 14, so all month it is too nearly in line with that body to be seen.

Annular Eclipse of Sun

The first eclipse of the year occurs on April 29, but only in the northwestern United States, western Canada and Alaska will North Americans be able to see it.

This is an eclipse of the sun, not total but annular. Although the moon passes between the earth and sun, its distance from us is so great that its apparent diameter is not enough to cause it to cover the sun completely, as it does in a total solar eclipse.

Instead, a ring of sunlight will remain visible around the dark lunar disc. To see this effect, one would have to be located along a curved area in the Arctic Ocean north of Russia.

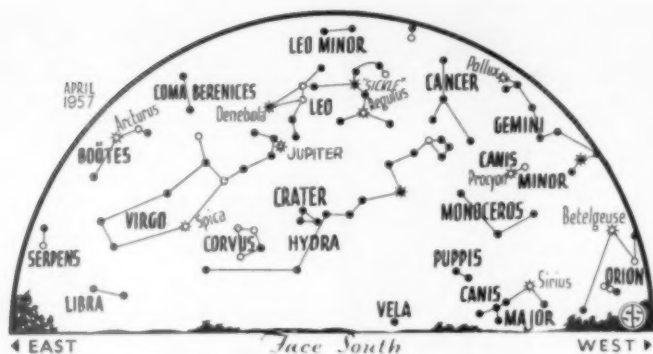
Over part of European Russia, most of Asia and northwestern North America there will be a partial eclipse, with the moon passing partly in front of the sun. At Seattle, for example, the eclipse will start at 5:05 p.m. PST, and end at 6:14 p.m.

At 5:40 the eclipse will be at its maximum, with 14% of the solar diameter covered, so it will not be a very large eclipse. At Anchorage, Alaska, it lasts from 2:01 p.m. to 4:02 p.m., Alaska standard time, with the maximum at 3:00 p.m. when almost half of the solar diameter will be covered.

Protection for Eyes

People who live in these areas, of course, should not try to look at the eclipse without adequate protection for the eyes. Smoked glass or several layers of over-





◊ * ◊ * ◊ SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

exposed photographic film should be used. Sun glasses or welder's goggles are not sufficient protection.

Mercury, which appears at the middle of April, has mean distance from the sun of only 36,000,000 miles, somewhat more than a third the earth's distance of 93,000,000 miles.

As it swings around the sun, it appears alternately to the west and east of that body. In the former case it moves ahead of the sun as they make their daily trip around the sky. Then it may appear just before sunrise, in the morning twilight. When east of the sun, as it is in April, it remains above the western horizon after the sun has set. However, this does not always bring it into our view.

When such an eastern "elongation" occurs in the autumn, it is not nearly as favorable for evening viewing as when it occurs in the spring.

In April this year conditions are almost at their best, so take advantage of your opportunity.

Even when Mercury does thus come into view, it never remains visible after twilight has faded and it is never seen very high in the sky, while the period over which it can be easily observed is not more than about a week.

The great Polish astronomer Copernicus, who showed that the planets revolve around the sun, is said never to have seen Mercury. Even at an elongation, the low-flying mists usually obscured it.

Celestial Time Table for April

APRIL	EST	
4	10:41 p.m.	Moon passes Mars.
7	3:32 p.m.	Moon at first quarter.
11	8:00 p.m.	Moon nearest, distance 226,100 miles.
12	9:02 a.m.	Moon passes Jupiter.
14	7:09 a.m.	Full moon.
	8:00 a.m.	Venus passes behind sun.
15	4:00 a.m.	Mercury farthest east of sun.
17	9:41 p.m.	Moon passes Saturn.
21	10:00 a.m.	Neptune nearest, distance 2,724,000 miles.
	6:00 p.m.	Moon in last quarter.
23	4:00 p.m.	Moon farthest, distance 251,500 miles.
29	6:54 p.m.	New moon—partial eclipse of sun visible in northwestern North America.

Subtract one hour for CST, two hours for MST, and three for PST.

Science News Letter, March 23, 1957

PUBLIC HEALTH

Public Demands Too Much In Health Insurance

► THE PUBLIC is demanding too many benefits from health insurance policies, Dr. Carl S. Mundy, Toledo, Ohio, vice chairman of the American Medical Association's council on rural health, said.

The trouble lies with the public's demand for benefits which do not belong in an insurance policy, he told the 12th National Conference on Rural Health meeting in Louisville, Ky.

Many of these items are small and insignificant, but they increase the cost of the policy out of all proportions to the benefit gained. Although they are not traditionally "insurable" under the basic laws of insurance operations, the public wants them regardless of the increase in costs, he said.

"Home and office calls, the annual health examination, annual X-rays . . . routine vaccination, are all events we know will happen to us and our children," he said.

Trying to cover them by insurance not only increases the premium but it abuses the original purpose of insurance. Events that are covered should be "predictable" for large groups or areas but "unpredictable" for the individual. They should not be events that recur at a given frequency or at regular intervals, he explained.

Hospital and medical insurance should be expected to cover the unpredictable and larger expenses, but if the public wants modern medicine with all it involves, it will have to expect a premium in proportion to the cost of the services.

Premiums would be materially less if only strictly insurable items were covered by the policies. The other small items should be taken care of outside the health insurance, he reported.

Science News Letter, March 23, 1957

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Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N.W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

AIR CONDITIONING, REFRIGERATING, DATA BOOK: Applications Volume—Willis R. Woolrich, Ed. in Chief—*American Society of Refrigerating Engineers*, 6th ed., 1,100 p., illus., \$10.00, plus postage. Of particular interest to engineers, architects and students.

ALCHEMY—E. J. Holmyard—*Penguin*, 281 p., illus., paper, 85 cents. The forerunners of modern nuclear physicists were changing one substance into another in China four centuries before the birth of Christ.

AMERICAN FAMILIES—Paul C. Glick—*Wiley*, Social Science Research Council in cooperation with the Bureau of the Census, Census Monograph Series, 240 p., illus., \$6.00. A demographic analysis based on the 1950 census.

BLUEPRINT READING—Chief, Naval Air Technical Training and Bureau of Naval Personnel—*Arco*, 242 p., illus., \$3.00. A basic reference book for men whose duties require a knowledge of blueprint reading and layout work.

THE BOOK OF KNOWLEDGE ANNUAL 1957—Louise McDowell, Ed. in Chief—*Grosset Society*, 420 p., illus., \$7.50. A total of 95 specialists write on as many timely topics in this annual for young people of all ages.

CHEMISTRY: The Conquest of Materials—Kenneth Hutton—*Penguin*, 228 p., illus., paper, 85 cents. A small book for the layman on the materials used by chemists and what they can make out of them.

CONNECTIVE TISSUE IN HEALTH AND DISEASE—G. Asboe-Hansen, Ed.—*Philosophical Library*, 321 p., illus., \$15.00. The work of 23 prominent contributors from different parts of the world.

DAIRY MICROBIOLOGY—Edwin M. Foster, F. Eugene Nelson, Marvin L. Speck, Raymond N. Doetsch and Joseph C. Olson, Jr.—*Prentice-Hall*, 492 p., illus., \$5.65. Intended as a college text and for reference use by dairy plant operators, fieldmen, laboratory personnel and sanitarians.

ENCYCLOPEDIA OF ROSES AND ROSE CULTURE—H. Champneys, Ed., revised by Carl L. Withner—*Prentice-Hall*, 226 p., illus., \$7.50. All about the selection and care of roses for the gardening enthusiast.

EVALUATION OF MINE DRAINAGE WATER—S. A. Braley—*Mellon Institute*, 3 p., paper, free upon request direct to publisher, 4400 Fifth Ave., Pittsburgh 13, Pa. Drainage from coal mines, the author points out, is probably the most serious water pollution problem today.

EXTRACELLULAR ACTIVITIES IN AVIATION, PHOTOPHYSIOLOGY, RADIO FOR SECONDARY SCHOOL PUPILS: Suggestions for School Administrators and Sponsors—Willis C. Brown—*Goet. Printing Office, Office of Education*, 48 p., illus., paper, 25 cents. Two of the fields of interest reported on here are on the Bureau of Labor Statistics' list of disciplines having critical personnel shortages.

FLOTATION—A. M. Gaudin—*McGraw-Hill*, 2d ed., 573 p., illus., \$12.50. Vast changes that have come to the art of flotation since publication of the first edition have necessitated complete rewriting. Flotation is now a widely used process for the separation or concentration of materials.

THE GALATHEA DEEP SEA EXPEDITION 1950-1952—Anton F. Bruun, Sv. Greve, Hakon Mielche and Ragnar Sparck, Eds., translated from the Danish by Reginald Spink—*Macmillan*,

296 p., illus., \$8.00. The story of a marine-biological world expedition told by the scientists themselves, describing the wonders they found on a trip around the world to all the Seven Seas.

GENERAL GEOGRAPHY FOR COLLEGES—O. D. Von Engeln and Bruce Carlton Netschert—*Harper*, 681 p., illus., maps by Clare M. O'Gorman, cartographer—\$7.50. The hope of the authors is to promote geographic literacy. The book begins with a survey of the landmarks of the world, a birdseye view of the chief physical features.

INSECTS: A Guide to Familiar American Insects—Herbert S. Zim and Clarence Cottam—*Simon and Schuster*, rev. ed., A Golden Nature Guide sponsored by the Wildlife Management Institute, 160 p., illus., by James Gordon Irving, paper, \$1.00, cloth, \$1.95. To help the novice collector identify and understand his specimens, to the problems.

INTRODUCTION TO OPERATIONS RESEARCH—C. West Churchman, Russell L. Ackoff and E. Leonard Arnoff and others—*Wiley*, 645 p., illus., \$12.00. An introductory textbook not requiring a high degree of mathematical maturity. Operations research is tentatively defined as "the application of scientific methods, techniques, and tools to problems involving the operations of a system so as to provide those in control of the system with optimum solutions to the problems."

THE JOURNAL OF SOLAR ENERGY SCIENCE AND ENGINEERING: Volume 1, Number 1, January 1957—Jean Jensen, Ed.—*Association for Applied Solar Energy*, 64 p., illus., paper, \$10.00 per year. Carrying original papers on all aspects of solar energy, as well as brief abstracts of significant papers which have appeared elsewhere and resumes of solar activities throughout the world.

LEAPER: The Story of an Atlantic Salmon—Robert M. McClung—*Morrow*, 64 p., illus., by the author, \$2.25. Telling for children the story of the life cycle of a salmon from his hatching from a pale pink egg to his return to his birthplace to fertilize another generation of salmon eggs.

MODERN MATHEMATICS FOR THE ENGINEER—Edwin F. Beckenbach, Ed.—*McGraw-Hill*, 514 p., \$7.50. Based on a lecture series at the University of California and including such topics as the theory of games, operations research, Monte Carlo methods and relaxation methods.

NEW AND NONOFFICIAL REMEDIES: Containing Descriptions of Drugs Evaluated by the Council on Pharmacy and Chemistry of the American Medical Association, 1957—Harold D. Kautz, Secretary of the Council—*Lippincott*, 582 p., \$3.35. Descriptions are presented under non-proprietary names with cross references under trade names.

ORGANIC SYNTHESIS: Volume 1, Open-Chain Saturated Compounds and Volume 2, Open-Chain Unsaturated Compounds, Alicyclic Compounds and Aromatic Compounds—Vartkes Migrdichian—*Reinhold*, 1822 p., \$35.00. For the serious organic chemical research worker and others engaged in organic synthesis.

PACKED THERMAL DIFFUSION COLUMNS: Effect of Changes in Annular Spacing and Packing Density—Lloyd J. Sullivan, Thomas C. Ruppel and Charles B. Willingham—*Mellon Institute*, 4 p., illus., paper, free upon request direct to

publisher, 4400 Fifth Avenue, Pittsburgh 13, Pa.

PHYSICS: A Textbook for Colleges—Oscar M. Stewart, revised by Newell S. Gingrich—*Ginn*, 6th ed., 756 p., illus., \$6.50. Introducing basic principles to beginning college students with no special mathematical training as a part of a general course in arts and sciences.

PLANT PATHOLOGY—John Charles Walker—*McGraw-Hill*, 2d ed., 707 p., illus., \$10.00. A general text describing symptoms, causes, disease cycles and control of nearly 100 representative diseases of plants.

THE PRESENT STATUS OF THE VOLCANOES OF CENTRAL AMERICA—Sharat Kumar Roy—*Chicago Natural History Museum, Fieldiana: Geology*, Volume 10, No. 28, 5 p., illus., paper, 15 cents. Discussing the circumstances under which the occasionally erupting volcanoes of Central America should be called active, when dormant, and when extinct.

PROCEEDINGS OF THE THIRD NATIONAL CANCER CONFERENCE, DETROIT, MICHIGAN, June 4-6, 1956—Lester Breslow and others—*Lippincott*, 961 p., illus., \$9.00. Report of a meeting at which some 1,698 persons gathered to exchange views and experiences.

PROFESSIONAL AMATEUR: The Biography of Charles Franklin Kettering—T. A. Boyd, foreword by Alfred P. Sloan, Jr.—*Dutton*, 242 p., illus., \$4.50. The colorful story of the life of "Boss Ket," whose inventiveness will probably be best remembered for his automobile self-starter.

REPORT ON THE ATOM: What You Should Know About the Atomic Energy Program of the United States—Gordon Dean—*Knopf*, 2d ed., 366 p., illus., \$5.00. The author, former chairman of the AEC, adds a new chapter covering significant developments since the first edition appeared.

SEMICONDUCTOR SURFACE PHYSICS—R. H. Kingston and others, Eds.—*University of Pennsylvania Press*, 413 p., illus., \$8.00. A collection of invited papers on the new semiconductors that are replacing vacuum tubes for many uses.

SNAKES AND SNAKE HUNTING—Carl Kauffeld—*Hanover House*, 266 p., illus., \$3.95. The author recounts his own experiences in the chase after such unusual game and, he assures us, has added no embellishment or fiction to his tales.

TOWARD OUTER SPACE—Franklyn M. Branley—*Alumni Publications (Home Education Council)*, 14 p., illus., paper, 25 cents. Brief description of the proposed earth satellites and rocket space travel.

WORCESTER FOUNDATION FOR EXPERIMENTAL BIOLOGY ANNUAL REPORT 1956—Hudson Hoagland, Gregory Pincus and Ralph I. Dorfman, Co-Directors—*Worcester Foundation*, 51 p., illus., paper, free upon request direct to publisher, 222 Maple Avenue, Shrewsbury, Mass. Summarizing, for non-scientists, the interesting activities of the Foundation during the year.

Science News Letter, March 23, 1957

Younger hens in the prime of health lay eggs with thicker whites and firmer shells than when they become older.

A pneumatic crash pillow is a rubberized nylon bag weighing less than two pounds to be stowed, deflated, in the back of airplane seats.

Witchweed attacks the roots of corn plants, causing yellowing of the foliage and severe stunting.

MEDICINE

Auto Accidents Causing Whiplash Injury to Neck

► WHIPLASH injuries to the human neck are now common occurrences on the highway because of the large percentage of traffic accidents that involve standing cars, a regional meeting of the International College of Surgeons was told in White Sulphur Springs, W. Va.

The injuries, caused by a snapping back of the head, may be of such little effect at the time that the individual gives it no attention, but the symptoms can show up at a much later date, Vice Admiral Ross T. McIntire, Chicago, executive director of the College and former White House physician to President Franklin D. Roosevelt, pointed out.

The unprotected back of the neck is easily damaged when an automobile is rammed from behind, and the injury may involve any of the nerves there, he said.

"Very often symptoms do not arise, in cases where there have been no fractures, for a period of many years," he reported.

Some of the symptoms of whiplash injury Dr. McIntire listed were some degree of concussion often, a neuralgic type of pain over a large part of the neck, back of the head and lower portion of the face, and a headache that begins at the back of the head and may radiate to the center of the skull and finally center behind one or both eyes.

If the force of the blow is at an angle, the neck may be severely rotated and cause other symptoms, he said. These include muscular spasms, dizziness, nausea and inability to see properly.

Eye troubles are persistent when whiplash injuries show up months or years after the accident, Dr. McIntire added.

Early diagnosis and treatment are important.

Science News Letter, March 23, 1957

BIOPHYSICS

Biophysicists Form National Society

► A NATIONAL SCIENTIFIC ORGANIZATION, temporarily called the Biophysical Society, was formed by 500 scientists attending the first National Biophysics Conference in Columbus, Ohio.

Biophysics is the application of physical principles, methods and techniques to the study of living things. It covers such subjects as the effects of atomic particle bombardment of the tiny chromosomes involved in cell division to the computer-like qualities of the human brain.

Dr. Robley C. Williams, University of California scientist famed for his studies using the electron microscope to visualize living matter, was elected chairman of the temporary council. The organizational meeting was sponsored by the U. S. Air Force's Office of Research and Development.

Science News Letter, March 23, 1957

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ENGINEERING

Rear-Engined Cars for U. S.

► REAR-ENGINED CARS are here to stay in European automobiles, and may soon find their way into American cars, the Society of Automotive Engineers meeting in Detroit learned.

"The idea that we have been building our passenger car 'backwards'—that the engine properly belongs at the rear rather than the front is not new," John R. Bond, consulting engineer and publisher of "Road and Track," told the Society.

Mr. Bond said that with consideration of the manufacturing cost, there is more potential savings in a rear-engine-transmission-differential, than in present day design. He concluded that there is "every reason to believe that a full-sized rear-engine car could command a premium price and if the waiting lists for Volkswagens are any indication, the American public is already 'sold' on the rear-engined car."

A European engineer, Fernand Picard of Regie Nationale des Usines Renault, told the Society that for piston displacements of less than 1,500 cubic centimeters, "the rear-engined car will not only maintain its

present position, but improve it."

In discussing the engine in the back, a third engineer, Brooks Stevens of Brooks Stevens Associates, had some interesting things to say about the car of the future in general.

He said that the most salable cars will be of evolutionary design and not those of the "space ship look." People of tomorrow, Mr. Stevens reminded the Society, will probably be very much like those of today and styling will not change radically. Weight and cost, he said, would depend on new material developments and processes. Power and performance would depend on highway design intelligence and safety factors.

"I am not sure," he concluded, "that Mr. or Mrs. Average America will necessarily be a better driver than we have today, but he will always want his car to look exemplary on the job it is to do or as a badge of the position he has attained, and if speeds were not to materially increase or become supersonic, he will always want his car to 'look' fast."

Science News Letter, March 23, 1957

MEDICINE

Serum Cures Mice Cancer

► AN "X" or unknown factor in the blood serum of guinea pigs completely cures two leukemic-like cancers in mice dying from the disease.

This possibly vital discovery has been made by Drs. John G. Kidd, Michael Haddad, Shirley Kauffman and Jean Elizabeth Todd, Cornell University Medical College and New York Hospital.

The lymphatic cancers that were cured with the serum are 100% fatal if allowed to run their usual course. When they are left untreated, the animals die within 30 days after the cancers are implanted and up to now nothing has been able to stop the fatal outcome. X-rays and the standard cancer-palliative drugs are useless at best and frequently make the animals worse.

But if the animals' bellies are filled with normal guinea pig serum 10 to 20 days after the cancer implant, they start to improve immediately, Dr. Kidd reported. Within 30 days the treated ones are healthy, and completely and permanently cured.

Serum taken from other animals, including horses, rabbits, and humans has been tried but with no effect. The guinea pig serum itself is effective only against two specific types of lymphatic cancer. In other types it, too, is useless.

Another mystery surrounding the anti-cancer factor is that it will only work when inside the animal. If the two vulnerable types of cancer are incubated with the serum in a dish, they remain unaffected.

These experimental results raise many questions about why the serum works. One possibility is that the animals themselves contain a "factor Y" which is needed to act in conjunction with the "X" factor in the serum. The cancer alone may contain the "factor Y," the researchers believe.

Further study is centered around isolating the important factor from the serum. The scientists are breaking down the serum into its separate components and testing the effect of each one on the cancer. By this method they hope to identify the active ingredient.

At present there is no practical application of the research to humans but if the mechanism of the cure can be solved, it may open up vast new possibilities for an effective cancer cure.

The research was reported by the American Cancer Society which supports the work.

Science News Letter, March 23, 1957

GEOPHYSICS

Earth's Magnetic Currents Mapped by Government

► THE EARTH'S MAGNETIC CURRENTS, where and how powerful they are, will be mapped during the International Geophysical Year by scientists of the U. S. Coast and Geodetic Survey.

The IGY, an 18-month study of the earth on a world-wide basis, starts July 1, and the Survey will conduct most of the

routine and special American magnetic studies during the period.

One mystery to be probed is the connection between magnetic storms and the northern and southern auroral displays. Changes in the earth's magnetic field affect navigation both by compass and by radio, so charts showing how the compass needle varies and predictions of radio reception are essential to safe shipping and flying.

Magnetic forces come from two sources. The strongest forces come from deep in the earth and are relatively stable. They do, however, change over many years and the charts must show such variations.

The hourly or daily fluctuations originate above the earth's surface and are related to sunspots and the aurora. These rapid changes will be given particular study during the IGY.

The Survey has seven permanent magnetic observatories in the United States, Alaska, Puerto Rico and Hawaii. It will add two temporary observatories and about 15 portable stations in the U. S. and Alaska. New instruments are being added to the regular stations in Fredericksburg, Va.; Tucson, Ariz.; College, Barrow and Sitka, Alaska; San Juan, P. R., and Honolulu.

In building magnetic observatories, special care is required not to use any magnetic materials. The buildings must also be heavily insulated to prevent temperature changes from affecting instruments, and light-proofed to preserve the records made on photographic paper.

Four observers with special magnetic instruments are stationed in Antarctica at Little America, Byrd, Wilkes on the Knox Coast and the South Pole.

Science News Letter, March 23, 1957

Questions

AERONAUTICS—What speeds have been predicted for supersonic transports of the future? p. 179.

☐ ☐ ☐

ASTRONOMY—When will the next annular eclipse of the sun occur? p. 186.

☐ ☐ ☐

ENGINEERING—What is a feature, now used in European cars, predicted for cars of the U. S.? p. 190.

☐ ☐ ☐

PHYSICS—Who is the first winner of the Atoms for Peace Award? p. 179.

☐ ☐ ☐

PUBLIC HEALTH—What are the new daily requirements of two B vitamins? p. 185.

☐ ☐ ☐

ZOOLOGY—What fish is a close companion to the shark? p. 192.

☐ ☐ ☐

PHOTOGRAPHS: Cover, pp. 181 and 183, Fremont Davis; p. 179, John J. Laughlin; p. 192, Eastman Chemical Products, Inc.

ELECTRONICS

Electron Tube Display

► MORE THAN 6,000 electron tubes, ranging from an example of the pioneering Edison tube to a gigantic modern 600,000 watt tube, told the history of the electronics industry at the national convention of the Institute of Radio Engineers at the New York Coliseum March 18 to 21.

The exhibit, known as the Princeton Tube Collection, commemorates the 50th anniversary of the patenting of the original electron tube. Thirty original tubes made by Edison, Fleming and de Forest are included.

Examples are shown from among the 40,000 different types of electron tubes developed for radar, television, X-ray, radio and other electronic applications.

Thomas A. Edison, in 1883, was able to pull a current of electricity from the vacuum of his incandescent lamp, but he never put it to successful use. Sir John Fleming, in 1904, added a control plate to the Edison Effect tube, and his Fleming "valve" increased the power and range of radio communications. Not until 1907 when Lee de Forest added a third element, a grid of platinum wire, was the first "audion," functioning as a rectifier, amplifier or oscillator, patented.

Though no one has ever seen an electron, the control of free electrons or particles of negative electricity has made a significant contribution to the shaping of man's destiny, it was explained in New York by Jerome Taishoff, president, Mycalex Corporation of America, which sponsors the exhibit. "Electron tubes open doors, sort merchandise, match colors, gauge thicknesses to millionths of an inch, detect tiny solids in liquids and gases, operate elevators and timing devices, ring alarms, calculate faster than any human brain and magnify what is otherwise invisible to optical instruments," he said.

"Though we are now celebrating the golden anniversary of Dr. de Forest's invention, the electronics industry is still in its infancy and promises even more fantastic wonders for the future."

Howard E. Schrader, who assembled the collection of electron tubes for the exhibit, has devoted most of his spare time since

1919 to the project. Interested in the infant art of radio, Mr. Schrader invested \$6 in one of the early electron relays to improve his equipment and it promptly burned out. Feeling that tubes were too valuable to be thrown away, he started collecting them. His research unearthed material bypassed by Edison biographers and broadened the understanding of the significant Edison contributions to electronics. Mr. Schrader is a member of the staff of the Palmer Physical Laboratory at Princeton University.

The Mycalex Corporation of America, sponsoring the Princeton Tube Collection display, is the world's largest manufacturer of glass-bonded mica and ceramoplastic products, and a major supplier of insulating materials for the electronics industry.

Science News Letter, March 23, 1957

ZOOLOGY

Ancient Jellyfish Follow Civilized Behavior Rules

► HOW an ancient form of jellyfish follows the same basic rules of behavior as do civilized people has been studied by Dr. Sears Crowell, professor of zoology at Indiana University, Bloomington, Ind.

These bell-shaped *Campanularia* were among the first forms of life to have their cells specialized for particular duties, and they exist as either free-roaming individuals or as citizens of tree-like colonies with individual rights and responsibilities.

By heaping upon them man-made disasters like the starvation periods that have affected life since the beginning of time, Dr. Crowell has found new clues to the fundamental processes that govern growth, reproduction, aging, and the survival of organized society.

Dr. Crowell maintains colonies of *Campanularia* under a variety of conditions. Some have abundant food all the time,

some go through "boom and bust" cycles, and some exist on starvation rations. Temperature is also varied from 50 to 70 degrees Fahrenheit.

In general, life looks to the distant future, Dr. Crowell reported. When times are good, growth and reproduction in the colony are in direct proportion to the available food. Young and old alike seem to reproduce at will and at about the same rate.

But when times are lean, the colony goes on a very different but very efficient economy. The older members that make up the trunk of the colony grow very little or none at all. Food priority goes to the young members, and the old are sacrificed to the younger ones' needs.

When the famines subside, the young, vigorous members of the colony then reproduce and grow.

The colony is essentially motivated by the preservation of life, although it does prey on other forms of life for survival and growth. Some *Campanularia* keep single-celled algae inside themselves which feed on their wastes and in turn give off the oxygen that the larger animal needs for its respiration.

Dr. Crowell's research was supported by the American Cancer Society.

Science News Letter, March 23, 1957

Do You Know?

A recently discovered 4,000-year-old pine tree probably attained the greatest age of any living thing.

The nation's petroleum pipeline system, which began less than a century ago as a five-mile length of wrought iron tubing, is now long enough to circle the earth seven and a half times and will hold 3,000,000,000 gallons.

Glycerine has been produced experimentally by fermentation of wood sugar.

How Life Is Handed On

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By CYRIL BIBBY

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—Science News Letter.

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✿ **URANIUM DETECTOR**, a gun-type scintillation survey meter, can be used for oil and uranium prospecting. It is described as having been built for the Government for aerial, mobile and foot prospecting. It is said to have extremely high gamma sensitivity, a short resolving time and a high counting rate.

Science News Letter, March 23, 1957

✿ **BIT HOLDER** attaches to the cord of an electric drill. Injection molded of rubber, it can hold 13 bits from one-sixteenth of an inch through one-quarter of an inch. It is primarily designed for use on the cord of a quarter inch electric drill.

Science News Letter, March 23, 1957

✿ **CORRUGATED ROOFING MATERIAL**, a British development, is described as adaptable to tropical, arctic, equatorial and temperate climates. The roofing is made from a formula that includes asbestos and bitumen. It is fireproof and available in a variety of colors.

Science News Letter, March 23, 1957

✿ **CONVERSATION BOOSTER** increases the acoustic output of your telephone by as much as 49 decibels. It clips onto the receiver, and it is designed to help the hard of hearing and improve connections. Housed



in a butyrate plastic case, the aid has a volume control for adjusting the level of audibility. It can be turned off when not in use.

Science News Letter, March 23, 1957

✿ **SLIDE PROJECTOR** for two by two slides is designed for industrial and educa-

tional purposes. Completely automatic, a 500-watt illumination covers the slide. The projector can be turned on and off from a remote position. An automatic timer will operate at any interval up to 60 seconds.

Science News Letter, March 23, 1957

✿ **ADVERTISING DISKS** for use on cars or small trucks appear stationary while the vehicle is in motion. Designed like big hub caps, the disks are waterproof and are suitable for painting or silk screening. No wires or braces are needed to hold them in place.

Science News Letter, March 23, 1957

✿ **BINOCULAR CASE** is quick-opening. Made for hunters, vacationers and nature students, the calfskin case is zippered on three sides. When unzipped, the case front drops open and makes the binoculars available for immediate use.

Science News Letter, March 23, 1957

✿ **MICROFILM CAMERA** for the purpose of simplifying microfilm copying is designed for reference library use. Made in three parts: the new copying apparatus has a base which is also the book holder, the metal column with a movable cross arm, and the camera.

Science News Letter, March 23, 1957



Nature Ramblings



By HORACE LOFTIN

► WHILE ALMOST everything else is happy to stay as far away as possible from a shark, there is one fish who is such a close companion that a shark could not lose him if he wanted to.

This fish with the peculiar taste in friends is the remora, or shark-sucker. In countless years of evolution the back fins (dorsal fins) of the remora have become changed into a sucking disk which is located on his head. With this sucker the remora attaches himself to his usual partner, the shark, or to other large fish, porpoises, turtles and even ships, to go along for a free ride.

The shark-sucker tags along with his shark friends for leftovers from their bloody feasts as well as for effortless transportation. When a shark feeds, the remora breaks

Companion of the Shark



loose to forage for himself among the crumbs, hopping back aboard when the meal is over.

The remora's sucking disk is so powerful that, once attached, it is almost impossible to pull the fish from a surface. Many native people take advantage of this by using the remora as a fishing ally. They tie a line to the fish's tail and throw it overboard

near the prey, usually a turtle. Once overboard, the remora swims straight to the turtle, attaching to its back, and the fishermen then pull both remora and turtle back to the boat by the line.

A fish with the odd habits and apparatus of the remora is bound to excite the imagination of those who see it, giving birth to legends and fables about it. People of the Middle Ages thought that the remora could slow down or halt completely the progress of sailing vessels by attaching to them. In fact, the scientific name of the remora, *Echeneis*, is from a Greek word meaning "holding back."

So long as the sailing is fair, the remora stays with his shark friend. But if the shark is caught and pulled out of water, the remora releases his sucker hold and swims away to hunt a luckier associate.

Science News Letter, March 23, 1957